attached hereto as Appendix I. For example, audio source 12 an external audio input 14, such as a tape recorder, CD drive, and the like [which passes] to stereo to monaural converter 16. Audio source 12 may also take the form of internal audio source 18 which is capable of generating a single tone or a multiplicity of tones. For example, eight notes of a scale (CDEFGABC) may be employed in this regard. Switch means SW3 permits the user of device 10 to select internal tone generator 18 or external audio input 14 into audio switch 20. Internal tone generator 18, separately depicted, originates in microprocessor U3. Tone control output 40 from U3 passes to right/left volume control and audio switch 20. The output of audio switch 20 passes to J2 headphones 22 which [is] are worn by the user or patient being treated by the clinician who operates device 10. Headphones 22 may receive a continuous tone alternated from the left side to the right side of the headphones. In the bridge mode, the external audio source 14 is heard by the user or patient wearing headphones 22, first in the right ear, followed by both the left and right ears, and, finally, the left ear from the corresponding sides of headphones 22. Thus, in the bridge mode there is never a time that one side or the other of headphones 22 is not switched on. A discrete mode may also be employed, through right/left volume control 20, in which a tone is heard momentarily in each ear through [head phones] headphones 22 in this case. Thus, in the discrete mode, there is a period of time when neither the left or right portions of headphones 22 is switched on. Thus, these elements comprise means 24 for delivering selected audio tones to the left and right ears of the subject. Switch SW5 is capable of

A2

21

selecting a particular note to be fed into microprocessor U3 for use in headphones 22. In addition, speed adjustment 30 is capable of varying the periodicity of a particular note. It should be apparent that the audio signal to [head phones] headphones 22 may be split for use in multiple headsets.

A2

Page 9, line 18.

Means 26 is also depicted for quantifying a variable body characteristic of the subject or patient. Such means 26 is labeled as J4 body param on Fig. 1. Means 26 may acquire the pulse rate, body temperature, blood pressure, eye blink rate, galvanic skin response (GSR), and the like from the patient. Such signal is sent to the parameter amplifier 28 and then to microprocessor U3. For example, means 26 may acquire the pulse from the patient through a finger clip, ear clip, or a similar type device of conventional configuration. A gain adjustment allows a weak signal from means 26 to successfully be inputted to microprocessor U3. After a time period, microprocessor U3 calculates an average pulse rate and turns on normalized LED 31 so that the particular parameter of the patient may now be used as a reference. The operator or clinician pushes SW4, the parameter normalized switch[,]. [the]The connecting of switch SW4 will cause the audio switch 20 to select a particular tone to be sent to audio speaker means 22 in the form of headphones. In this mode, SW3 would be set to internal tone source 18. U3 may be programmed to automatically change tones sent from internal output 18 to headphones 22, dependent on the level fed to microprocessor U3 via parameter output 28.

A3

22

A

Page 11, line 1.

With reference to Fig. 2, it may be observed that the particular circuitry used in the present invention is shown. J3 represents the connector plug for the external audio source. Capacitors C1 and C2, in conjunction with resistors R1 and R2, comprise the stereo-to-monaural 16 converter. The monaural signal passes through leg 42 to switch SW3 which determines the source of the audio output from U3. U3 oscillator 44 passes through Schmidt trigger U1. Capacitor C1 acts as a filter. Oscillator 44 is capable of generating internal tones either singularly or along a scale. U4 serves as a multiplexor and receives three signals from U3. Multiplexor U4 feeds headphones 22 (J2) having a right volume control 46 and a left volume control 48. Switch SW5 determines one of eight internally generated tones, deriving from oscillator 44, sent to microprocessor U3. Resistor R6 regulates the rate of alternation of tones between the left and right sides of headphones 22, and is essentially an analog-to-digital converter. Thus, R6 controls the rate of switching of the multiplex tones traveling from left to right in headset 22. Resistors [46] <u>47</u> modulate the signals from SW5 and are considered to be pull-up resistors. SW2, controlled by the clinician, determines the "bridge mode" or "discrete mode" for tones emanating from internal tone output 18.

A1

Page 12, line 6.

[Turning] <u>Referring</u> to means 26, a human parameter or physiological characteristic, such as pulse rate, GSR, temperature, and the like, is quantified. J4 serves as the input and CR5 serves as an indicator 31, Fig. 2, of the same when a normalized parameter

A3

23

has been achieved. As prior explained, this is performed through an averaging of, say pulse rate, over a period of time by U3. U2 serves as an amplifier for the signal generated by pulse sensor 50. U1 produces a square wave signal of a digital nature, the output of which is fed into microprocessor U3. CR6 indicates the input to U2. The power input to system 10 on Fig. 2 is indicated at various areas by a number followed by the letter "V". For example, plus 5 volts and minus 5 volts are fed into operational ~~amplifier U2~~.

A5

Page 12, line 18.

J5 represents a tactile probe or probes 42 and is driven by a voltage, +V at transistors Q1, Q2, and Q3. In certain cases, the voltage, +V is at or about 9 volts. Again, microprocessor U3 generates a signal to operate transistor switches Q1, Q2, and Q3 to activate tactile probes 42. CR1 is a back EMF suppression diode which protects Q1, Q2, and Q3 from inductive kickback from conventional motors employed with tactile probes 42.

A6

Page 14, line 41.

Figs. 3 and 4 [shows] show a housing 52 permitting the clinician to operate device 10. Headset 22 is depicted schematically having left [ear piece] earpiece 54 and right [ear piece] earpiece 56.

A7

24

A

IN THE SPECIFICATION:

CLEAN VERSION OF SPECIFICATION

Page 5, line 15.

Another object of the present invention is to provide a device for applying therapeutic stimuli which employs audio sources that are internally generated or found externally to the system.

Page 8, line 6.

The invention as a whole is shown in the drawings by reference character 10. Device 10 includes as one of its elements a microprocessor U3, Fig. 1. Microprocessor U3 may be of the type with the designation 68HC705. Microprocessor U3 serves to direct and to coordinate multiple inputs and outputs in the system 10 of the present invention. The programmed binary code for U3 is attached hereto as Appendix I. For example, audio source 12 an external audio input 14, such as a tape recorder, CD drive, and the like to stereo to monaural converter 16. Audio source 12 may also take the form of internal audio source 18 which is capable of generating a single tone or a multiplicity of tones. For example, eight notes of a scale (CDEFGABC) may be employed in this regard. Switch means SW3 permits the user of device 10 to select internal tone generator 18 or external audio input 14 into audio switch 20. Internal tone generator 18, separately depicted, originates in microprocessor U3. Tone control output 40 from U3 passes to right/left volume control and audio switch 20. The output of audio switch 20 passes to J2 headphones 22 which are worn by the user or patient being treated by the clinician who operates device 10. Headphones 22 may receive a continuous tone alternated from the left

side to the right side of the headphones. In the bridge mode, the external audio source 14 is heard by the user or patient wearing headphones 22, first in the right ear, followed by both the left and right ears, and, finally, the left ear from the corresponding sides of headphones 22. Thus, in the bridge mode there is never a time that one side or the other of headphones 22 is not switched on. A discrete mode may also be employed, through right/left volume control 20, in which a tone is heard momentarily in each ear through headphones 22 in this case. Thus, in the discrete mode, there is a period of time when neither the left or right portions of headphones 22 is switched on. Thus, these elements comprise means 24 for delivering selected audio tones to the left and right ears of the subject. Switch SW5 is capable of selecting a particular note to be fed into microprocessor U3 for use in headphones 22. In addition, speed adjustment 30 is capable of varying the periodicity of a particular note. It should be apparent that the audio signal to headphones 22 may be split for use in multiple headsets.

Page 9, line 18.

Means 26 is also depicted for quantifying a variable body characteristic of the subject or patient. Such means 26 is labeled as J4 body param on Fig. 1. Means 26 may acquire the pulse rate, body temperature, blood pressure, eye blink rate, galvanic skin response (GSR), and the like from the patient. Such signal is sent to the parameter amplifier 28 and then to microprocessor U3. For example, means 26 may acquire the pulse from the patient through a finger clip, ear clip, or a similar type device of conventional configuration. A gain adjustment allows a weak signal from means 26

to successfully be inputted to microprocessor U3. After a time period, microprocessor U3 calculates an average pulse rate and turns on normalized LED 31 so that the particular parameter of the patient may now be used as a reference. The operator or clinician pushes SW4, the parameter normalized switch. The connecting of switch SW4 will cause the audio switch 20 to select a particular tone to be sent to audio speaker means 22 in the form of headphones. In this mode, SW3 would be set to internal tone source 18. U3 may be programmed to automatically change tones sent from internal output 18 to headphones 22, dependent on the level fed to microprocessor U3 via parameter output 28.

Page 11, line 1.

With reference to Fig. 2, it may be observed that the particular circuitry used in the present invention is shown. J3 represents the connector plug for the external audio source. Capacitors C1 and C2, in conjunction with resistors R1 and R2, comprise the stereo-to-monaural 16 converter. The monaural signal passes through leg 42 to switch SW3 which determines the source of the audio output from U3. U3 oscillator 44 passes through Schmidt trigger U1. Capacitor C1 acts as a filter. Oscillator 44 is capable of generating internal tones either singularly or along a scale. U4 serves as a multiplexor and receives three signals from U3. Multiplexor U4 feeds headphones 22 (J2) having a right volume control 46 and a left volume control 48. Switch SW5 determines one of eight internally generated tones, deriving from oscillator 44, sent to microprocessor U3. Resistor R6 regulates the rate of alternation of tones between the left and right sides of headphones

22, and is essentially an analog-to-digital converter. Thus, R6 controls the rate of switching of the multiplex tones traveling from left to right in headset 22. Resistors 47 modulate the signals from SW5 and are considered to be pull-up resistors. SW2, controlled by the clinician, determines the "bridge mode" or "discrete mode" for tones emanating from internal tone output 18.

Page 12, line 6.

Referring to means 26, a human parameter or physiological characteristic, such as pulse rate, GSR, temperature, and the like, is quantified. J4 serves as the input and CR5 serves as an indicator 31, Fig. 2, of the same when a normalized parameter has been achieved. As prior explained, this is performed through an averaging of, say pulse rate, over a period of time by U3. U2 serves as an amplifier for the signal generated by pulse sensor 50. U1 produces a square wave signal of a digital nature, the output of which is fed into microprocessor U3. CR6 indicates the input to U2. The power input to system 10 on Fig. 2 is indicated at various areas by a number followed by the letter "V". For example, plus 5 volts and minus 5 volts are fed into operational amplifier U2.

Page 12, line 18.

J5 represents a tactile probe or probes 42 and is driven by a voltage, +V at transistors Q1, Q2, and Q3. In certain cases, the voltage, +V is at or about 9 volts. Again, microprocessor U3 generates a signal to operate transistor switches Q1, Q2, and Q3 to activate tactile probes 42. CR1 is a back EMF suppression diode which protects Q1, Q2, and Q3 from inductive kickback from conventional motors employed with tactile probes 42.

Page 14, line 41.

Figs. 3 and 4 show a housing 52 permitting the clinician to operate device 10. Headset 22 is depicted schematically having left earpiece 54 and right earpiece 56.